



**U. S. Department of Energy**

# **Type B Accident Investigation**

**Injury Resulting From  
Violent Exothermic Chemical Reaction  
at X-701B Site  
Portsmouth Gaseous Diffusion Plant**

**Oak Ridge Operations**

**October 2000**

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## RELEASE AUTHORIZATION



his report is an independent product of the Type B Investigation Board appointed by G. Leah Dever, Manager, Oak Ridge Operations, U.S. Department of Energy. The Board was appointed to perform a Type B investigation of these incidents and to prepare an investigation report in accordance with DOE Order 225.1A, *Accident Investigations*.

The discussion of facts, as determined by the Board, and the views expressed in the report are not necessarily those of the U.S. Department of Energy and do not assume and are not intended to establish the existence of any legal causation, liability, or duty at law on the part of the U.S. Government, its employees or agents, contractors, their employees or agents, or subcontractors at any tier, or any other party.

This report neither determines nor implies liability.

## INDEPENDENT REPORT

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n August 23, 2000, I appointed a Type B Accident Investigation Board to investigate the August 22, 2000, violent chemical reaction involving an employee of the IT Corporation who received serious burns which required hospitalization. The employee was working on an environmental management technology deployment project at the Portsmouth Gaseous Diffusion Plant of the Department of Energy Oak Ridge Operations located in Piketon, Ohio. The responsibilities of the Board have been satisfied with respect to this investigation. The analysis, identification of contributing and root causes, and judgments of need resulting from the investigation were performed in accordance with DOE Order 225.1A, *Accident Investigations*.

I accept the report of the Board and authorize release of the report for general distribution.



G. Leah Dever  
Manager  
Oak Ridge Operations

Date Accepted: 10/20/00

## PROLOGUE



his Type B investigation is an important reminder that activities we carry out every day have important health and safety implications.

Many of the projects at Oak Ridge Operations share challenging characteristics with the project that is the subject of this investigation; that is, they involve multiple programs, multiple customers, and multiple contractors. Therefore, it is imperative that the guiding principles and core functions of integrated safety management are carried out from the highest level in the organization down to the work being completed. We need to ensure that clear lines of authority and responsibility are delineated throughout work planning and into project completion. The identification of potential hazards continues to be an area that needs improvement, and I expect significant improvement to be made.

I trust that all federal employees and contractors supporting Oak Ridge Operations will take the time to read this report, think about its applicability to their work, recognize that there is no such thing as a routine health and safety activity, and work with us to achieve an integrated safety management system.

A handwritten signature in blue ink, reading 'G. Leah Dever'.

G. Leah Dever  
Manager  
Oak Ridge Operations

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## ACRONYMS

AHA	Activity Hazard Analysis
bisulfite	Sodium metabisulfite $\text{Na}_2(\text{S}_2\text{O}_5)$
BJC	Bechtel Jacobs Company LLC
Board	Accident Investigation Board
COR	Contracting Officer's Representative
DEAR	Department of Energy Acquisition Regulations
DOE	Department of Energy
EM	Environmental Management
EPA	Environmental Protection Agency
ES&H	Environment, Safety, and Health
FRx	FRx Corporation
FR	Facility Representative
FY	Fiscal Year
HASP	Health and Safety Plan
HS	Health and Safety
HSO	Health and Safety Officer
ISCOR	In-situ chemical oxidation recirculation
ISM	Integrated Safety Management
ISMS	Integrated Safety Management System
IT	IT Corporation
MSDS	Material Safety Data Sheet
M&I	Management and Integration
ORO	Oak Ridge Operations
ORNL	Oak Ridge National Laboratory
OSHA	Occupational Health and Safety Administration
OSU	Ohio State University
permanganate	Sodium permanganate
PM	Project Manager
PORTS	Portsmouth Gaseous Diffusion Plant
PPE	Personal protective equipment
thiosulfate	Sodium thiosulfate $\text{Na}_2(\text{S}_2\text{O}_3)$
QAPjP	Quality Assurance Project Plan

## ACRONYMS (continued)

SHSO	Site Health and Safety Officer
SME	Subject Matter Expert
SORC	Site Operations Review Committee
SSHS	Site Safety and Health Supervisor
STR	Subcontractor Technical Representative
TCE	Trichloroethene - $C_2HCl_3$
TWP	Technical Work Plan
USEC	United States Enrichment Corporation
USQD	Unreviewed Safety Question Determination
UT-Battelle	UT-Battelle, LLC
VOC	Volatile Organic Compound
WAD	Work Authorization Directive